

**6Z10**

# **Compactron Pentode — Gated-Beam Discriminator**

The 6Z10 is a compactron containing a gated-beam discriminator and a beam pentode. The gated-beam discriminator is suitable for FM and TV limiter and discriminator applications, and the beam pentode for audio power output service.

## **GENERAL**

### **ELECTRICAL**

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC\* . . . 6.3±0.6 Volts

Heater Current† . . . . . 0.95 Amperes

Direct Interelectrode Capacitances§

**Gated-Beam Discriminator Section**

Grid-Number 1 to Grid-Number 3 . . . 0.009 pf

Grid-Number 1 to All . . . . . 4.4 pf

Grid-Number 3 to All . . . . . 3.2 pf

**Pentode Section**

Grid-Number 1 to Plate . . . . . 0.22 pf

Input . . . . . 11 pf

Output . . . . . 7.5 pf

### **MECHANICAL**

Operating Position - Any

Envelope - T-9, Glass

Base - E12-70, Button 12-Pin

Outline Drawing - EIA 9-58

Maximum Diameter . . . . . 1.188 Inches

Minimum Diameter . . . . . 1.062 Inches

Maximum Over-all Length . . . . 2.375 Inches

Maximum Seated Height . . . . . 2.000 Inches

Minimum Seated Height . . . . . 1.750 Inches

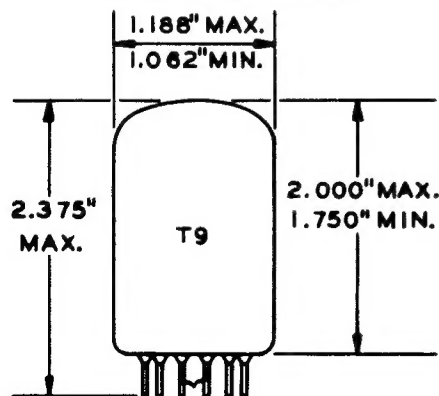
## **MAXIMUM RATINGS**

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

### **PHYSICAL DIMENSIONS**

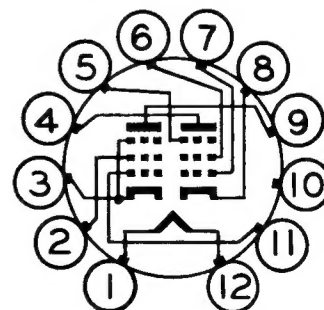


EIA 9-58

### **TERMINAL CONNECTIONS**

- Pin 1 - Heater
- Pin 2 - Pentode Grid Number 2 (Screen)
- Pin 3 - Pentode Cathode and Beam Plates
- Pin 4 - Gated-Beam Discriminator Plate
- Pin 5 - Gated-Beam Discriminator Grid Number 3 (Quadrature)
- Pin 6 - Gated-Beam Discriminator Grid Number 2 (Accelerator)
- Pin 7 - Gated-Beam Discriminator Grid Number 1
- Pin 8 - Gated-Beam Discriminator Cathode and Internal Shields
- Pin 9 - Pentode Plate
- Pin 10 - No Connection
- Pin 11 - Pentode Grid Number 1
- Pin 12 - Heater

### **BASING DIAGRAM**



EIA 12BT

**MAXIMUM RATINGS (Cont'd)****DESIGN-MAXIMUM VALUES****Gated-Beam Discriminator Section**

Plate-Supply Voltage . . . . .	330	Volts
Accelerator-Supply Voltage . . . . .	330	Volts
Peak Positive Grid-Number 1 Voltage . . . . .	60	Volts
DC Cathode Current . . . . .	13	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component . . . . .	100	Volts
Total DC and Peak . . . . .	200	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak . . . . .	200	Volts

**Pentode Section**

Plate Voltage. . . . .	275	Volts
Screen Voltage . . . . .	275	Volts
Plate Dissipation . . . . .	10	Watts
Screen Dissipation . . . . .	2.0	Watts
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component . . . . .	100	Volts
Total DC and Peak . . . . .	200	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak . . . . .	200	Volts
Grid-Number 1 Circuit Resistance		
With Fixed Bias . . . . .	0.25	Megohms
With Cathode Bias . . . . .	0.5	Megohms

**CHARACTERISTICS AND TYPICAL OPERATION****AVERAGE CHARACTERISTICS****Gated-Beam Discriminator Section**

Plate Voltage. . . . .	135	135	135	Volts
Accelerator Voltage. . . . .	75	---	---	Volts
Accelerator-Supply Voltage . . . . .	---	280	280	Volts
Accelerator Resistor . . . . .	---	33000	33000	Ohms
Grid-Number 1 Voltage . . . . .	0	0	0	Volts
Grid-Number 3 Voltage . . . . .	+4.0	+4.0	0	Volts
Plate Current. . . . .	---	5.0	---	Milliamperes
Accelerator Current. . . . .	4.5	---	---	Milliamperes
Grid-Number 1 Transconductance . . . . .	---	---	360	Micromhos
Grid-Number 3 Transconductance . . . . .	---	---	700	Micromhos
Grid-Number 1 Voltage, approximate				
Ib = 20 Microamperes . . . . .	---	---	-4	Volts
Grid-Number 3 Voltage, approximate				
Ib = 20 Microamperes . . . . .	---	---	-4	Volts

**CLASS A<sub>1</sub> AMPLIFIER****Pentode Section**

Plate Voltage. . . . .	250	Volts
Screen Voltage . . . . .	250	Volts
Grid-Number 1 Voltage . . . . .	-8.0	Volts
Peak AF Grid-Number 1 Voltage . . . . .	8.0	Volts
Plate Resistance, approximate . . . . .	100000	Ohms
Transconductance. . . . .	6500	Micromhos
Zero-Signal Plate Current. . . . .	35	Milliamperes
Maximum-Signal Plate Current. . . . .	39	Milliamperes
Zero-Signal Screen Current . . . . .	3.0	Milliamperes
Maximum-Signal Screen Current . . . . .	13	Milliamperes
Load Resistance . . . . .	5000	Ohms
Total Harmonic Distortion, approximate . . . . .	8.5	Percent
Maximum-Signal Power Output . . . . .	4.2	Watts

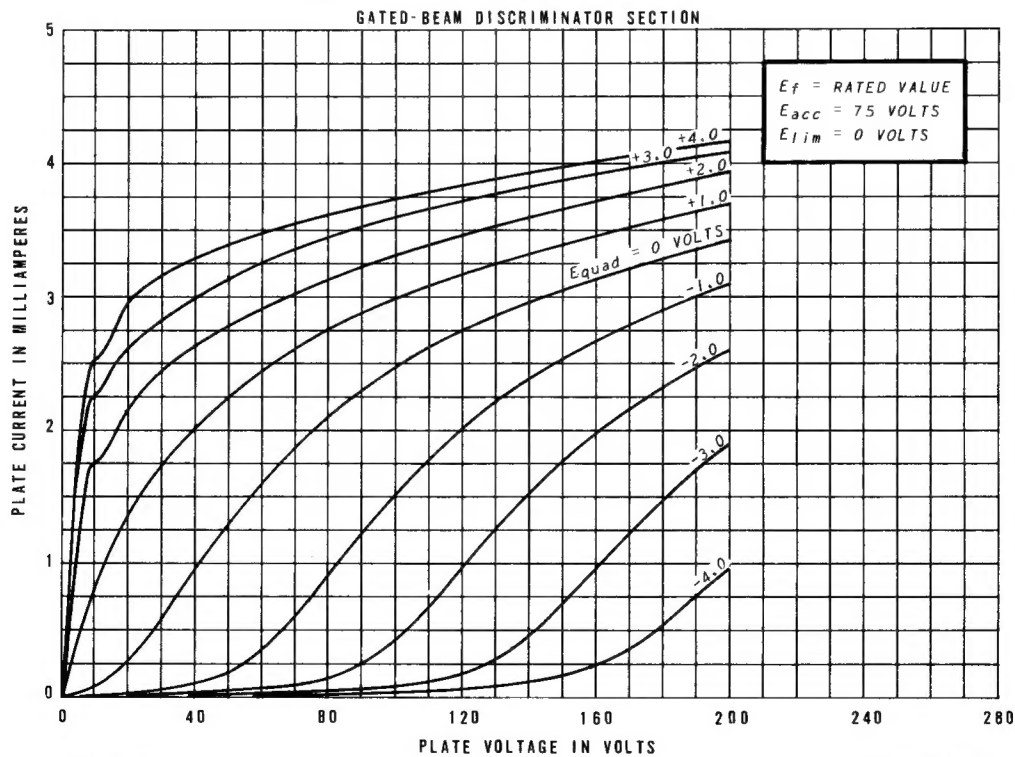
## NOTES

- \* The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.
- † Heater current of a bogey tube at  $E_f = 6.3$  volts.
- § Without external shield.

The tubes and arrangements disclosed herein may be covered by patents of General Electric Company or others. Neither the disclosure of any information herein nor the sale of tubes by General Electric Company conveys any license under patent claims covering combinations of tubes with other devices or elements. In the absence of an

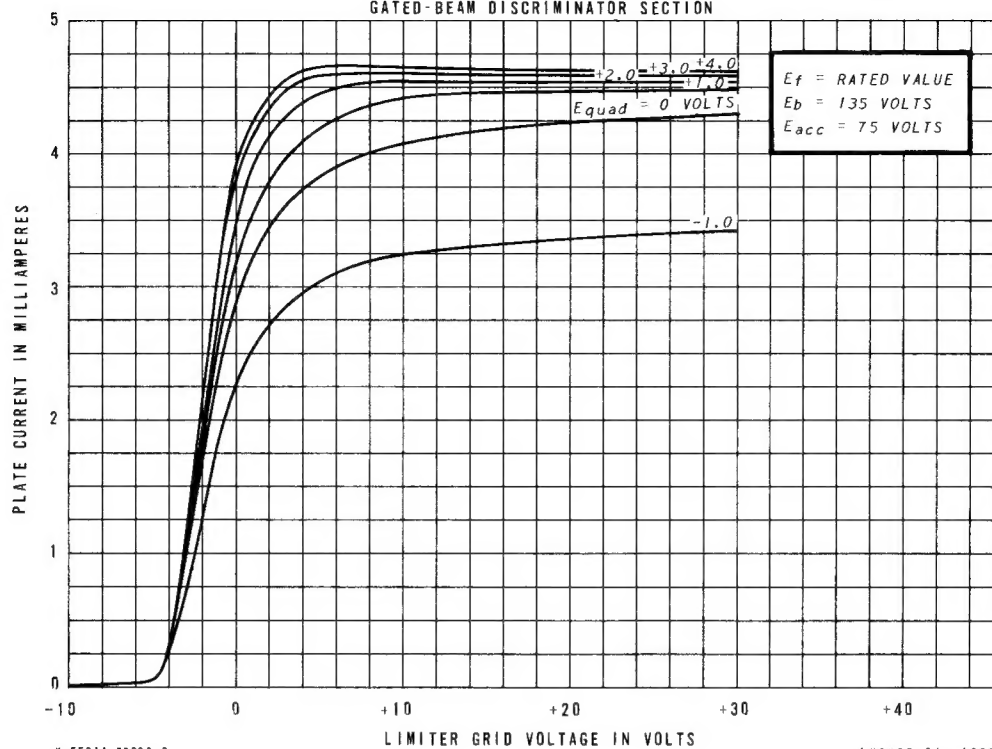
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## AVERAGE PLATE CHARACTERISTICS



## AVERAGE TRANSFER CHARACTERISTICS

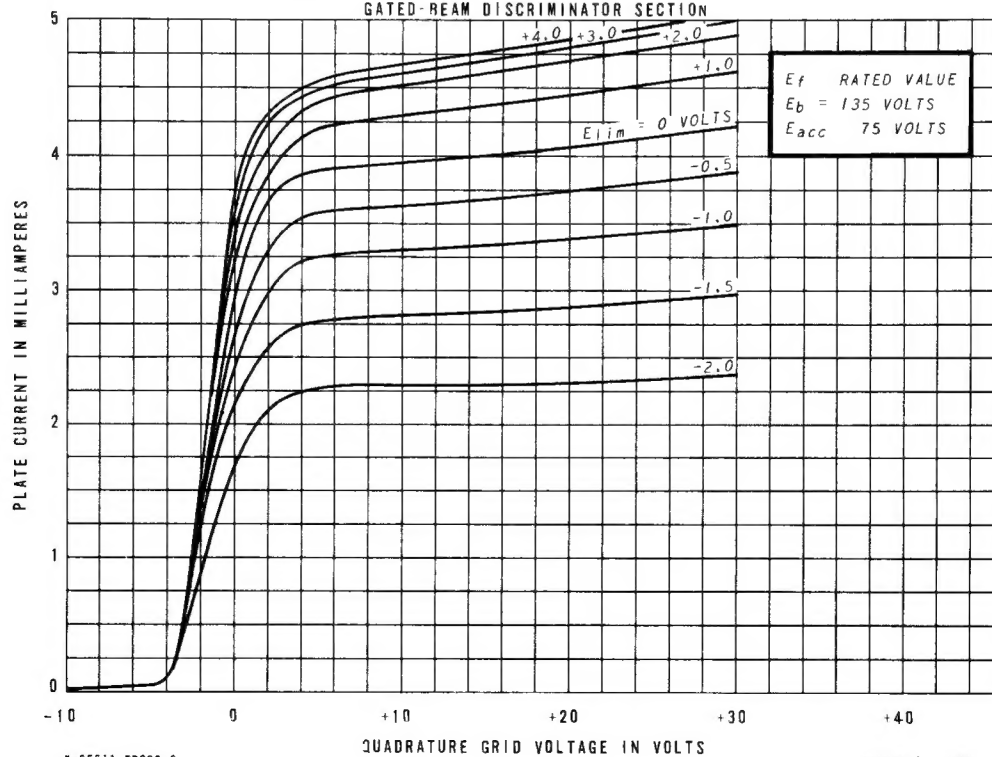
GATED-BEAM DISCRIMINATOR SECTION



AUGUST 24, 1965

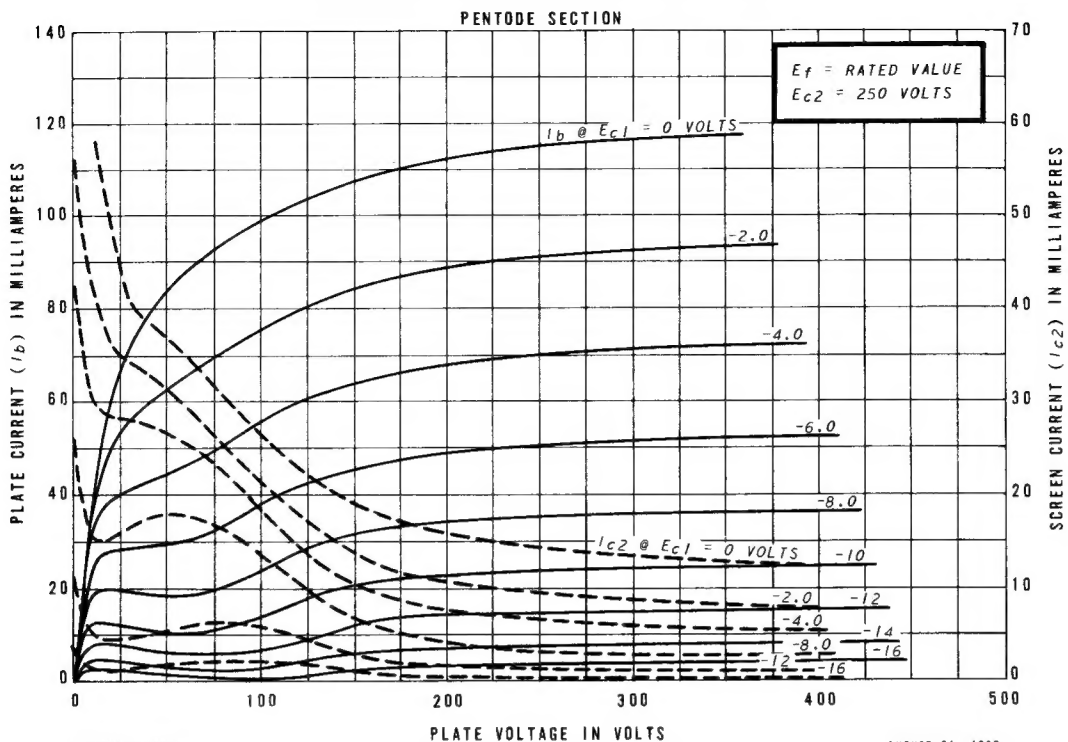
## AVERAGE TRANSFER CHARACTERISTICS

GATED-BEAM DISCRIMINATOR SECTION

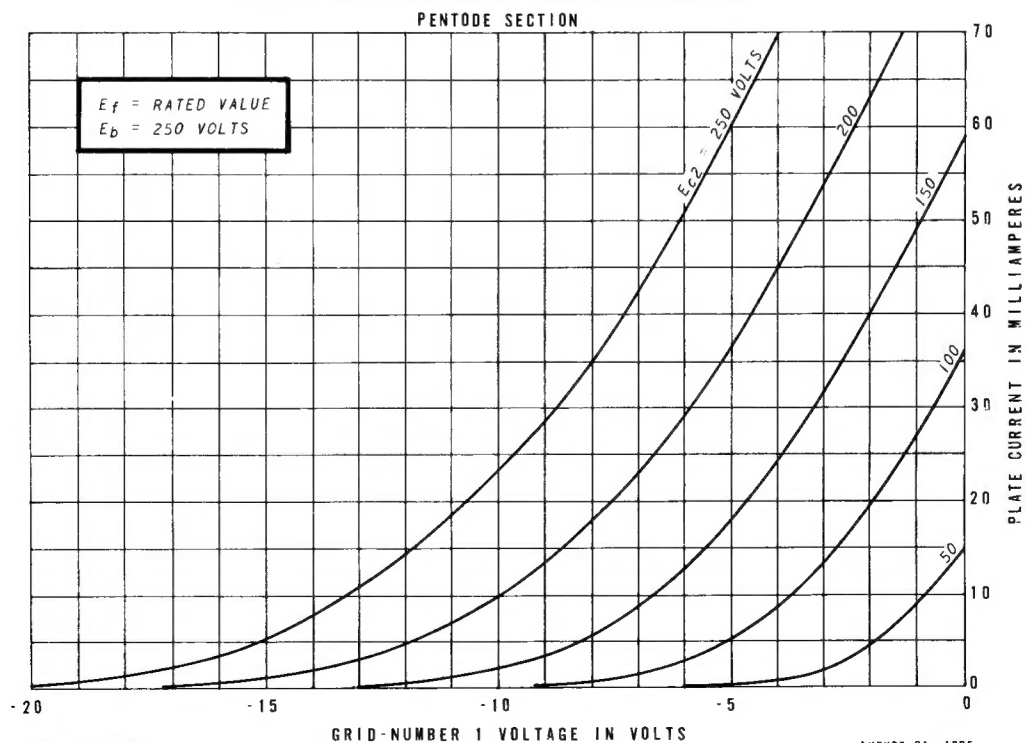


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## AVERAGE PLATE CHARACTERISTICS

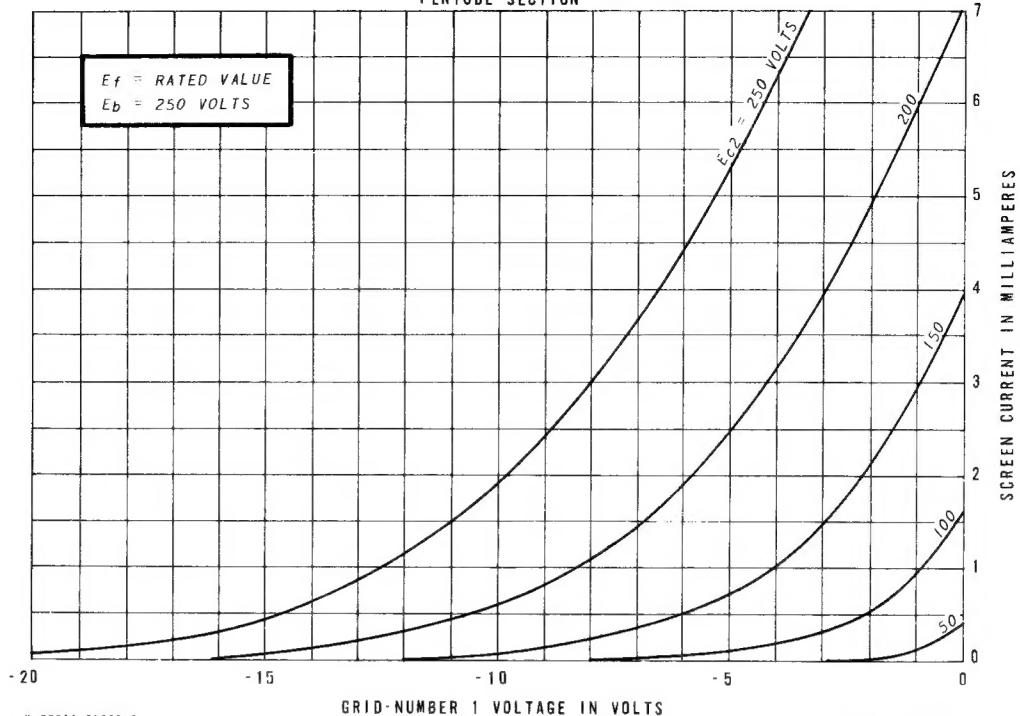


## AVERAGE TRANSFER CHARACTERISTICS



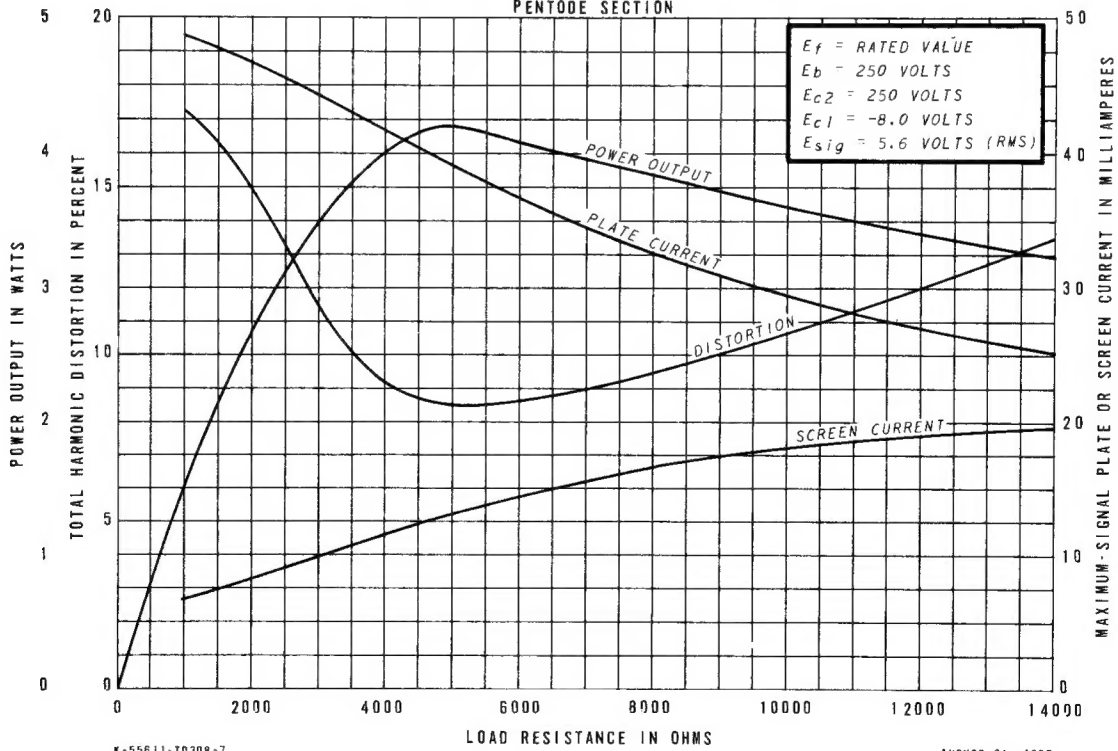
## AVERAGE TRANSFER CHARACTERISTICS

PENTODE SECTION



## OPERATION CHARACTERISTICS

PENTODE SECTION



TUBE DEPARTMENT

**GENERAL  ELECTRIC**

Owensboro, Kentucky